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ABSTRACT

This paper, using the concept of method as a unit of analysis, constructs an analog model for analysis of small units or entire programs in the classroom instruction situation (CIS). The author formulates a series of conceptualizations, translated into diagrams, of the CIS based on viewing teaching and learning as (a) cases of intellect activity or of method, and (b) components of a third system, instruction. The final diagram represents attributes of a concept of teaching which has two sectors: the overt sector or the teaching acts, and the covert sector or the evaluation of the teaching acts, which represents the state of mind teachers should possess before engaging in instruction. Summarizing, the author states that teachers can gain much intellectual satisfaction from using a syntactical model of classroom situations to develop understanding of the concept of theory. Elaboration of the model leads to clarifying pedagogical concepts and to solving basic problems in the professional growth of teacher education. A glossary of terms and a 34-item bibliography are included. (PD)

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"A Conceptual Analog Model of the Syntactical Structure of the Classroom Instructional Situation"

TEACHER ACTS: PART ONE--
THE SYNTACTICAL CONTEXT

Introduction

Abraham Flexner,[1] famous for his report on medical education, is perhaps less known for his definitive statement on the nature of a professional. He characterizes a profession as being built around the thinking process; that it is essentially intellectual in nature and its context is that of decision making and personal responsibility. The professional applies intellect to a specific class of problems and seeks to understand and master the problems of the profession. Furthermore, he emphasizes that professionals have a wide range of discretion which may be exercized individually or in cooperation with other professionals.

Flexner concludes that in intellectual operations there is a personal risk; one must be able to explain why one made a certain decision to act in a selected way. And a very important consideration is that all professions have practical ends which are realized by intellectual control of problems. The professional works conceptual systems into practice either directly himself or indirectly through the instrumentality of another agent.

In what ways do or do not the above points describe a teacher's work and training? What is the primary responsibility of a teacher in a professional role?

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Answers to these questions lead to another important point made by Flexner. Each profession "possesses a technique capable of communication through an orderly and highly specialized discipline."[2]

Thus it would seem, according to Flexner's framework, that the teaching profession must have a pedagogical sector of its own (Colleges of Education) and this pedagogical function has the task of sharing with prospective and inservice professionals bodies of knowledge which are basically intellectual in character but also "practice" translations of this intellectual base.

In the teaching profession this intellectual base refers to the ability to explain the nature of and reason for teacher and student means and ends. Explanation is a product of a theoretical-generalization system of language which generates an end-in-view of understanding.[3]

Understanding of the contextual or structural whole of a situation is theoretical in nature and not many teachers understand the concept of theory. The reason is quite simple. Although students of classroom instructional situations are trained in what is labelled a professional school, very rarely is there an attempt at systematically teaching the nature of theory.[4] This is a singular state of affairs for a discipline whose members profess to be professional and rather strange for members of a profession that some see as being, to various degrees, concerned with other disciplines that are bodies of theories.

With this lack of the theory concept, it is difficult to discuss with teachers the relating of theory to practice. For two states of affairs to be related, some degree of familiarity with the two states of affairs must be known.

Lack of a Pedagogical Theory

It is even more difficult to discuss pedagogical theory in the context of classroom instructional situations because very little theory has been developed. As a basis for helping educators explore the concept of theory, I will develop an analog model of a concept of classroom instructional situations. This will be a model of the syntactical structure. This conceptual model may then be used for ordering and communicating about the attributes of classroom instructional situations and may be used to generate theoretical generalizations about and research on classroom instructional situations (CIS); the primary unit of the educational process and the basic responsibility of the teacher. In professional training when too much emphasis is placed on just teaching acts, the context of these acts is minimized. This results in professionals losing their intellectual perspective.

Historically, educators have had difficulty in developing theoretical frameworks directly connected with the classroom instructional situation as a complete unit. It has been a rather fragmented study of separate elements of teaching and learning. Dewey was quite concerned about the theoretical phase in the growth of the teaching profession. He spoke of the

term abstract as having a "rather bad name," but continues to point out that "abstraction is an indispensible trait in reflective direction of activity [act]."[5] Without this reflective direction, teachers have developed a reputation for reaching for any gimmick that hustlers market and are blown by any intellectual breeze that blows their way.[6] Henry James seemed also to sense the professional timidity of teachers when he said that they were a rather docile bunch and quite receptive. (In this context, James was referring to the "new" psychology in 1889 as an intellectual breeze.[7])

The docility and timidity referred to by both James and Dewey years ago certainly did not refer to the physical prowess of teachers. Others have a tendency to infer that the indication of timidity is intellectual.[8] If intellectual refers to theory-based explanatory statements of the context of teacher acts, educators have much research ahead of them.

Although many valuable studies on teaching acts have been reported, the singular fact is that many teachers are docile, timid, and almost ignorant of the area which is unique to teaching; pedagogical theory of the classroom. The research has not been placed in a structural context. This may seem rather strange to both lay persons and teachers alike, but even with a very superficial look at the literature in education, one is struck with the amazing amount of conflicting viewpoints on pedagogical issues and one is rather befuddled by the wild schemes promoted by various opportunistic people who thrive on the vague understanding of practicing teachers as to their

means of structuring and maintaining classroom instructional situations.

Rocks and Teachers

Many people in the pedagogical business fall into the same category as rocks; they behave--they do not, on the whole, act. We find this framework of act and behavior, suggested by Green,[10] to be a very interesting and a very profitable one. It helps differentiate a professional practitioner from one who "works with students." Green's conceptual framework postulates that we may look at situations involving people and understand them better (being able to intellectually control them) by determining whether they move in obedience to and in conformity with influences or whether they act <u>because</u> of theoretical understanding. Rocks <u>behave</u> in obedience to the laws of gravity. There is no deliberate thoughtful intellect process before responses.

Acts as seen by Green involve deliberate intellect processes of considering generalizations which would account for acts initiated. In other words, acts are rule-governed movements.

This does not mean that professionals reflect before <u>every</u> movement they make. Rather, it points to the singular fact that professionals move in a general context of a situation which has been intellectually reflected upon at one time or another. Singular acts only have significance in the context of a whole. If we have, however, thought theoretically about what Dewey called the "qualitative whole,"[11] tactics (acts) of classroom instructional situations seem to fall into place.

Tactics synthesize because evolutionary processes like dynamic classroom instructional situations are made up of transactional relationships between all elements of a situation.[12] Each tactic or component in a situation is dependent on others for significance. Biologically speaking (out of the discipline of education), all components in a classroom instructional situation have a symbiotic relationship. Teachers quickly learn that all movements of both teacher and students have ways of influencing each other. If teachers merely behave in a classroom in response to influences, they will have difficulty measuring up in a coming accountability emphasis.

Teacher Training

Again, this is not the fault of teachers; they have not been systematically educated in the theoretical basis for the CIS. Some teacher educators recognize this. Raths and colleagues have pointed out:

> The arguments against methods courses do have some strong points on their side. . . . [It] is indeed true that there are very few generalizations about teaching that have solid empirical support [and] many students find the methods courses impractical. . . . The sorry fact. . . is that there is far too little theory in education. . . .[13]

Complaints by prospective teachers and inservice teachers in masters degree programs that courses are impractical and too theoretical seem to intersect. But the reverse is true. They are not theoretical enough to allow teachers to develop their own unique tactics or means. The methods courses are impractical because generalizations are usually not emphasized. As

Dewey said, "theory is in the end. . . the most practical of all things."[14]

The "problems" approach as often used in education courses and as found in the titles of courses in schools of education is impractical. The problems approach, although related to the case study approach in law, falls short because in many instances the problems are related to the personal teaching experiences of the instructors which are difficult to generalize to other specific situations. Many education courses have a built-in antedotal obsolescence. These courses are psychologically entertaining to university students but are logically lacking in building a systematic theoretical approach to the classroom instructional situation.[15]

Is this hard to digest professionally? For some, who are serious about the profession of teaching, it causes much heartburn; to others it is not even a mild indigestion, for they do not even realize a problem exists. But it does. B.O. Smith pointed cut: "When we began our current study of teaching, we had only the vaguest notion of teaching and no theory of teaching whatever."[16]

La Grone gets right to the heart of our problem and in a way proposes a challenge to all in the profession of teaching.

> In studying teaching we must pursue a way to get the components and elements together. It is essential that we do so because the real problem in teacher education has been our failure to integrate the many concepts that are operative in a teaching-learning situation.[17,18]

What indeed are the components of "teaching?" Perhaps even more basic because of the necessary emphasis on the total responsi-

bility of a teacher as a professional is the question, "What are the components of the classroom instructional situation?" The CIS is the basic responsibility of a teacher, not just teaching. Teaching, seemingly, must logically be placed within a CIS context to have significance.

First of all, anyone who has made some effort to study the literature of "teaching" has soon discovered that such a study is frustrating. Writers use terms almost any way that pleases them (see footnote 18). Trying to translate the terminology and equate conceptual terms is hardly worth the effort. Often the CIS is reduced to teaching; a near-perfect instance of the fallacy of reductionism. For most teachers, both inservice and prospective, reading about "teaching" is an effort that does not pay high dividends. Secondly, many inservice programs are attempts to patch up inadequate basic understandings of teachers of the total complexity which is their responsibility.[19]

Theory

Many teachers reading educational literature do not have a complete conceptual framework or model of the CIS with which to order the material being read into meaningful, productive generalizations. Of what are these understandings composed? The first concept in relating theory to practicing acts is to know that the purpose of theory is to explain a state of affairs and the objective of explanation is to develop understanding. Thus understanding is related to the make-up of theory.

In discussing the structure of theory, Holton emphasizes that the basic components of theory are concepts that represent the elements of the state of affairs under consideration. Symbols or words that represent these concepts make up the vocabulary of the discipline.[20] King and Brownell concur and add another important aspect:

> The group [professional community] shares the precious resource of a specialized language. . . which makes precision of definition and inquiry possible. [The community] has a set of more or less well-related concepts.[21]

Holton continues with the most significant step in:

> Second, there are the relationships between the concepts. . . That part contains the grammar for expressing. [And these expressions or generalizations] mean nothing without the definitions of the concepts. A concept is useless unless it appears in relation to other concepts.[22]

Students of classroom instructional situations must start with the meaning of components or concepts and then place these concepts into relationships with other concepts and these statements of relationships are called generalizations.

Facts[23] are specific exemplars of theoretical frameworks. Teaching as a concept refers to an infinite number of acts. But more importantly, concepts gain their greatest usefulness from being related to each other so that they serve an explanatory function.

We may use the generalization, "In classroom instructional situations, teaching encourages intellect expanding" as an example of a generalization which can be understood and given interpretive significance by using the syntactical concept model of classroom instructional situations proposed in this

paper. To understand the generalization, one must know the meaning of the components in the concept of classroom instructional situations. This generalization relates some of the components.

The concept of intellect, although an integral part of conceptualization and language, will not be dealt with in the present paper. Neither will the relating concept of "encourages" which may be related to psychology of intellect growth. We are dealing with a syntactical structure of the concept, classroom instructional situation.

The Concept of the Classroom Instructional Situation as a Context for Building a Theory of Classroom Instructional Situations

We borrow the term syntactical from our study of language. We look at it as the superstructure of a state of affairs (analog model)[24] into which we may place the semantic structure of meanings. Similar to grammatical structure, it is not specifics which are important, but rather meanings that are placed in a structure and play a functional role in relation to the contextual whole. But similar to speaking, we must conceptually hold a syntactical analog model of the structure of the CIS and be able to make decisions about placing various meanings which are functional in the conceptual whole. Our problem in educational theory at the present stage is to develop and use models which have optimal flexibility and utility.

To be of optimum profit, an analog conceptual model ought to be isomorphic not only to the whole CIS but also to separate constituent systems. Vygotsky has suggested this approach to

meaningful analysis in his book Thought and Language.[25] Using such a principle, one finds that the concept of method can be used as a generic unit of analysis and synthesis in developing a conceptual framework of classroom instructional situations.

Reference here is to method in its generic sense of representing intelligent and intellectual functioning of relating means to ends.[26] We are not particularly concerned with selected methodology, which B.O. Smith warns against in his stimulating article on the concept of teaching.[27] We use the concept of method as a unit of analysis and synthesis of which different methodologies are specific outgrowths of the generic concept.

The Syntactical Structure as an Analog Model

The development of a concept of instructional situations starts with the assumption that the very nature of an instructional situation requires it to be a case of intellect activity because the ends of instructional situations are increments of intellect for students.

Conceptualization of the classroom instructional situation is to be based on looking at teaching and learning as cases of intellect activity[27] or of method. These are two intellect systems in the CIS (learning and teaching). When synthesized they generate a third (instruction).

One could symbolize the concept of method by the construct $M \rightarrow e$. "M" represents means, "e" represents end-in-view,

and the arrow represents the relationship between the two. Because the objective of an analog model is educational in function, as many of the elements as possible in a complex situation ought to be represented. The more elements that enter into a concept framework, the greater the potential of intellectual control one has over the situation. In the basic concept model we bifurcate the "means" element into "acts" and "content" (Dewey strongly warned against this as a basic philosophical stance, but saw merit for purposes of analysis).[29] Thus the basic model would become A ← e. We undertake a series of acts with the use of selected content toward an end-in-view. Otherwise we have random behavior and not act. Behavior may be non-methodic. We use act to mean considered movement toward an end-in-view and is in keeping with Green's framework.

We must emphasize "toward" an end-in-view because methodic acts are not dependent on realization of ends. One may act methodically toward an end, otherwise we could not judge intellect functioning (act) until after realization of an end. Both learning and teaching in the CIS are examples of this "toward" emphasis in looking at intellect functioning and this "toward" component is a crucial element in conceptualization of classroom instructional situations.

The Relationship of Learning and Teaching

One of the problems in professional literature on "teaching" has been that of explaining the relationship involved in the hyphenated construct "the teaching-learning situation." For

purposes of understanding practice, we may symbolize this relationship by using our generic symbolic model of method and postulating where the relationships are indicated by the two places they intersect within the concept of the classroom instructional situation (CIS).

Possibly the most obvious intersection to students of instructional situations is found in the purpose of teaching. The purpose of teaching is to engage students in intellect activities (intelligent and intellectual functioning) or commonly referred to, and correctly so, as learning activities with the "toward" emphasis on learning.

This intersection would make our proposed syntactical model take an integrated form. The "acts" of learning would become the "ends" or purpose of teaching. In symbols representing components of the instructional situation the model would develop in the following phases:

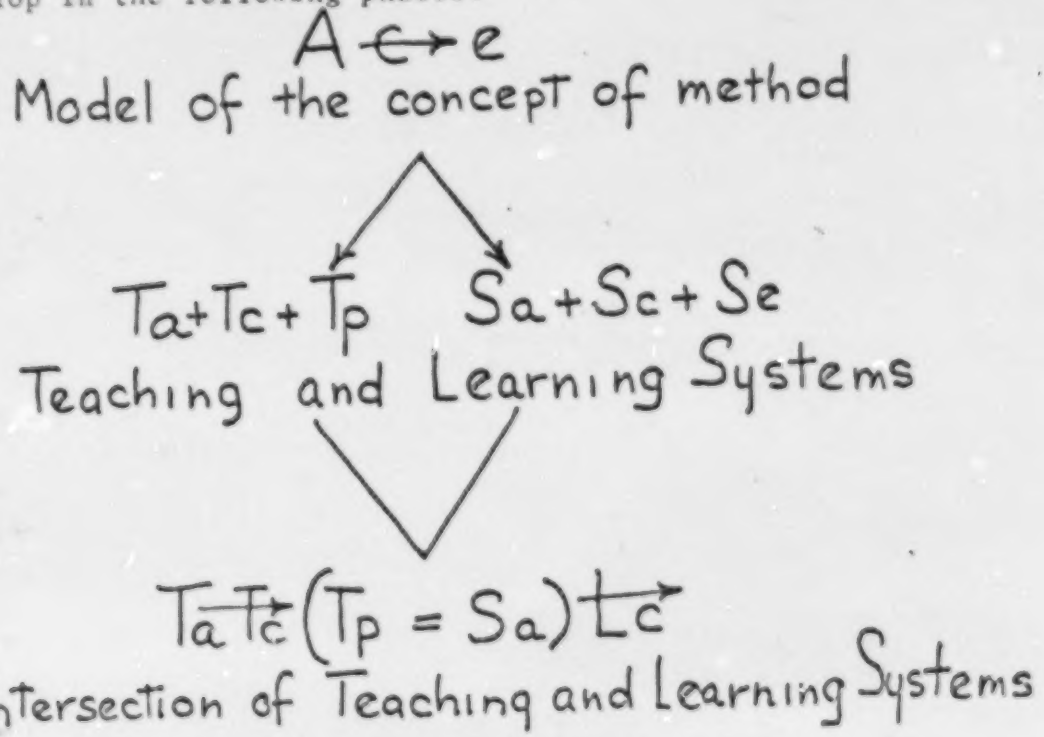

Fig. 1 Intersection of Teaching and Learning

Note that for purposes of emphasis we have translated "Sc" or student content into "Lc" or learning content.

At this point the arrow on the right side of the model has no "end" because we postulate here the second and most significant intersection of teaching and learning in the proposed conceptual model to be used in helping teachers conceptualize classroom instructional situations.

In using the concept of method as the generic unit of analysis with the isomorphic relation of method to parts as well as the whole we must also look at the entire situation as one methodic unit. The two symbolic units of teaching and learning must be synthesized into one unit and this is best accomplished by looking at both teaching and learning as having identical ends. The purpose of teaching means (Ta + Tc)[30] is to engage students in learning means (Sa + Lc).[31] Learning means (Sa + Lc) and teaching means (Ta + Tc) have the identical end-in-view; increments of the student's intellect. This would be symbolized as T-Se or Teacher-student ends.[32] The syntactical structure of the CIS, based on the concept of method, would then evolve to an almost completed form.

$$[Ta \; Tc \rightarrow (Tp = Sa) \; Lc \rightarrow T\text{-}Se]$$

A "v" additive to the teacher-student end represents a coefficient of value ascribed to ends in any intellect function.

Ends must be viewed by both teacher and student as having worth, something to strive toward. It seems to me, that motivation is a result of an antecedent valuing process on the part of teachers and students. Motivation is generated from valuing an end-in-view.

In classroom instructional situations establishment of an end-in-view ought to be based on the present development of the student.[33] To any methodic classroom instructional situation we add an A, before teaching and learning, to represent assessment of students in selected areas. This assessment helps set the increments of intellect ($T\text{-}Se^{v}$) to work toward and acquire. No value judgment is placed on students because of assessment. This is where teachers and students begin. An additional element in the CIS is a corollary to A, namely E, which represents evaluation as to the progress of learning in relation to the objectives or ends-in-view symbolized by $\tilde{T}\text{-}Se^{v}$.

With the addition of an arrow in the $\overleftarrow{Sa}$ to represent feedback of students to the teacher for purposes of adjusting components in the teaching and learning systems during instruction, the syntactical analog model of the CIS is complete.

$$CIS = (A[Ta\,Tc(Tp=\overleftarrow{Sa})\,Lc\,T=Se^{v}]E)$$

Fig. 2 Analog Model of Classroom Instructional Situations

Glossary of Terms

1. CIS represents Classroom Instructional Situations.
2. A represents Assessment of student development.
3. Ta represents Teachers Acts.
4. Tc represents Teaching Content.
5. Tp represents Teaching Purposes.
6. Sa represents Student Acts.
7. Lc represents Learning Content.
8. T-Se represents Teacher-Student ends.
9. V represents the coefficient of value of the $T\text{-}Se^{V}$.
10. E represents Evaluation of student development.
11. $\longrightarrow$ represents process movement toward an objective.
12. $\overleftarrow{Sa}$ refers to the condition of student acts as diagnostic cues for teaching means change.
13. The synthesis of Ta + Tc is teaching means.
14. The synthesis of La + Lc is learning means.
15. The synthesis of Ta + Tc (Tp + $T\text{-}Se^{V}$) is the process of teaching.
16. The synthesis of Sa + Lc + $T\text{-}Se^{V}$ is the process of learning.
17. Classroom instruction is the intersection of teaching and learning based on assessment and evaluation.
18. I.E., instructional ends are identical to teacher-student ends.

Note that assessment and evaluation are outside of the concept of instruction. The concept of instruction is represented by the elements inside of the brackets and is basically

a transactional process of teaching and learning in a symbiotic context of the classroom.

There are two aspects of representing E and A as being outside of the process of instruction. One aspect relates to somewhat continuous ineffectual training efforts of teacher educators in helping prospective and inservice teachers place institutionalized schooling in a context of what Dewey clearly elaborated in Experience and Education; the concept of continuity. Expanding the intellect is a continuous, cumulative process. To intelligently structure and maintain a classroom instructional situation, a teacher must develop a set of T-Se^{V}'s (Performance specification, objectives, goals or behavioral objectives may be used) based on where the students are at the time they enter her area of responsibility. Assessment emphasizes the diagnostic process. Evaluation represents a judgment of how far along the continuum of progress the student has come toward the T-Se^{V}; or has he achieved or gone beyond the T-Se^{V}? The syntactical model helps to place this issue of continuity into a context.

Secondly, is the human problem of teachers making value judgments about students while they are in the process of going toward the T-Se^{V}; i.e., the self-fulfilling prophesy syndrome. Teachers at all levels need to be reminded that value judgments about abilities to make progress toward a T-Se^{V} should not be made on the tactics and strategies used in the learning process. Teachers must deal with these learning means (Lc + Sa), helping students to learn and correct them, only as means; as means which

are part of the process of learning toward the end-in-view.

We separate instruction into teaching and learning. We represent teaching as having two process sectors.

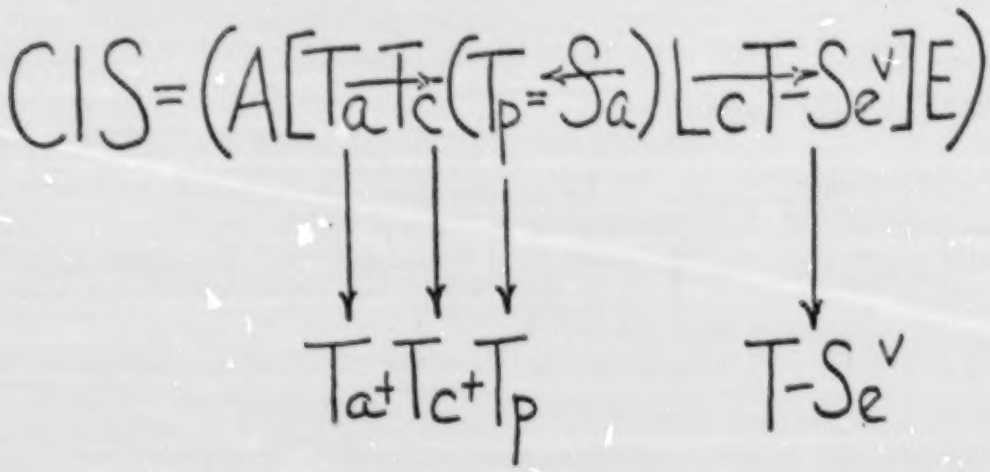

Fig. 3 ATTRIBUTES OF A CONCEPT OF TEACHING

With such a representation of teaching, we are able to show and communicate the difference between teaching and talking. When a teacher is talking with a clearly defined T-Se^{v} (objective shared with students) then she is teaching. In the absence of a T-Se^{v}, we can say that she is merely talking.

This syntactical model will help educators remember that the concept of teaching has two parts or sectors. The overt sector or teaching acts (Ta + Tc) may be recorded by instruments now available. The evaluations of these data must be done in the context of the covert sector (Tp + T-Se^{v}) to meet the criteria for intellect functioning as outlined in this discussion. We refer to Tp + T-Se^{v} as covert to represent the state of mind which teachers ought to possess before engaging in instruction. Both Tp translated into Sa and the Te^{v} translated into T-Se^{v} will become manifest as instruction progresses.

The generalization "Teaching encourages intellect expanding" previously referred to in this discussion can be represented and discussed in terms of the components of the syntactical model.

After A, a teacher establishes the T-Se^{V} and communicates the end-in-view to students in one of a variety of forms. Through a series of sequential Ta (verbal and non-verbal [qualitative] communication) with appropriate Tc based on the T-Se^{V} the teacher engages the students in Sa with an appropriate Lc. The Lc is a function of T-Se^{V}. Inasmuch as intellect is an individual psychological function, it would seem that the major concern in accountability in the classroom instructional situation would be the Sa + Lc (intellect expanding). Intellect expansion is <u>through</u> the students and would depend on the v of T-Se^{V} and on the quality and appropriateness of the Sa + Lc. Ta encourages or sets the psychological context for Sa + Lc. The student is the direct agent in learning.

Note the possibilities for discussion, analysis and communication in using the model. Educators can have a commonality of symbols with which to communicate, analyze and criticize. Generalizations can be generated when relationships between components are established through using existing and future research.

<u>Summary</u>

We have used the concept of method as a unit of analysis in constructing an analog model to be used for an analysis of

small units or entire programs in the classroom instructional situation.

With the model, prospective teachers, inservice teachers, and instructional leaders can relate, compare, communicate, engage in theory construction using the attributes of the model with some of the excellent studies of "teaching" which have been done in recent years. Teachers gain much intellectual satisfaction from using such a syntactical model of classroom situations to develop understanding of the concept of theory. Elaborations of the model lead to such clarifications as the differences between teaching acts and teacher acts, curriculum and teaching and many other confused concepts in pedagogical situations. Much interest is generated from understanding a little more clearly what colleagues are referring to in their descriptions of professional problems. The model is used to help solve a basic professional problem in the professional growth of teacher education. Use of such models, representing the complete responsibility of the teacher, will help educators move more closely to the theory foundation which a professional needs.

As an attempt at scientific control of a complex state of affairs, the explanations and model developed in this inquiry are open to criticism, extension and refinement. Such exchanges, on the level of ideas, toward a common end of establishing a profession of teaching, are only indicative of approaching such a worthy end-in-view.

As Gage points out:

Paradigms are models, patterns or schema. Paradigms are not theories; they are rather ways of thinking or patterns for research that when carried out, can lead to the development of theory.

And models are profitable for helping teachers relate theory to practice.

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[2]Ibid., p. 580.

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[4]For a related discussion of this issue, see Eugene B. Hadden, Evolving Instruction (New York: Macmillan Co., 1970), chapter one.

[5]John Dewey, Democracy and Education (New York: The Free Press, 1916), p. 226.

[6]John Dewey, Experience and Education (New York: Collier Books, 1938), p. 51.

[7]William James, "Psychology and the Teaching Art," Talks to Teachers on Psychology: And to Students on Some of Life's Ideals (New York: W.W. Norton and Company, 1958, p. 23.)

[8]H. Weinstock, in "Liberal and Professional Undergraduate Education" Improving College and University Teaching, Autumn, 1968, pp. 247-249, makes a cogent argument that although liberal arts majors and professional school students are by definition "equal" in achievement ability at the freshman level, tests "appear to test academic abilities oriented to some fields of study than to others" (248). Tests given graduates of liberal arts and professional schools show a significant difference in favor of the liberal arts graduates but the tests also showed a significant difference between the natural science liberal arts students and the humanities and social science liberal arts students in favor of the natural science liberal arts students. There were no significant differences between students of the various professional school students tested. The question still continues to be, "What are these tests testing?"

[9]In commenting on Flexner's definitive discussion on the nature of a profession (basically intellectual, practical, organized and altruistic), Becker suggests that "one is hard put to understand why anyone should want to alter Flexner's original statement, for the similarities between it and those that followed are more striking than the differences." (Howard S. Becker, "The Nature of a Profession," Education for the Professions, Sixty-First Yearbook of the National Society for the

Study of Education, Part II (Chicago: The University of Chicago Press, 1962, p. 27). Henry Weinstock's discussion "Professionalizing Teaching," The Clearing House, September, 1970) certainly brings out that perhaps the intellectual base is the one common factor to most attempts to clarify the meaning of the term professional.

[10]Thomas F. Green, "Teaching, Acting and Behaving," Harvard Educational Review (Vol. 34, No. 4, 1964), pp. 507-524.

[11]John Dewey and Arthur Bentley, Knowing and the Known (Boston: Beacon Press, 1949), pp. 103-118; also John Dewey, Logic: A Theory of Inquiry (New York: Henry Holt and Company, 1938), p. 68.

[12]We use the term situation in relation to this transaction framework suggested by Dewey. In Logic: A Theory of Inquiry he develops the nature of a situation. "Its import may perhaps be most readily indicated by means of a preliminary negative statement. What is designated by the word, "situation" is not a single object or even a set of objects and events in isolation, but only in connection with a contextual whole: (66) "an object or event is always a special part, place or aspect of an environing experienced world situation." (67) ". . .it is to be remarked that a situation is a whole in virtue of its immediately pervasive quality. . . . The pervasive qualitative is not only that which binds all constituents into a whole but is also unique; it constitutes in each situation an individual situation, indivisible and induplicable." (68)

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[17]Herbert F. LaGrone, A Proposal for the Revision of the Pre-Service Professional Component of a Program of Teacher Education (Washington, D.C.: The American Association of Colleges of Teacher Education, 1964), p. 1.

[18]It will be noted that even within the limits of this insightful statement there is a loose use of terminology. It appears that the author has used teaching and teaching-learning situation as synonomous constructs. This falacious reduction of teaching to instruction is one of many misconceptions that is present in the study of classroom instructional situations.

[19]B.O. Smith, S. Cohen, and Arthur Pearl, Teachers for the Real World (Washington, D.C.: The American Association of Colleges for Teacher Education, 1969), Chapter 12.

[20]Gerald Holton, Introduction to Concepts and Theories in Physical Science (Reading, Massachusetts: Addison-Wesley, Inc., 1952) p. 258.

[21]Arthur R. King and John A. Brownell, The Curriculum and the Disciplines of Knowledge (New York: John Wiley and Sons, 1966), p. 68.

[22]Holton, op. cit., p. 258.

[23]Jean Piaget and Barbel Inhelder in Memory and Intelligence (Bloomington, Indiana; Phi Delta Kappa International, 1969) point out that facts, to be remembered, must be placed into a conceptual system. In this way, they gain significance. As a conceptual structure is built up, memory for facts may improve.

[24]Joseph E. Hill and August Kerber, Models, Methods and Analytical Procedures in Education Research (Detroit: Wayne State University Press, 1967), p. 14-19.

[25]L.D. Vygotsky, Thought and Language (trans.) E. Naafmann and G. Vakor (Cambridge: The M.I.T. Press, 1962).

[26]See Chapter 13 of Dewey's Democracy and Education.

[27]B.O. Smith, "A Concept of Teaching," Language and Concepts in Education (ed.) B.O. Smith and Robert H. Ennis (Chicago: Rand McNally and Company).

[28]Although this discussion is not specifically concerned with what I have in other places called the "terminology problem" in the professional phases of teacher education, it is crucial to differentiate between the "knowing that" which we shall designate as intellectual and "knowing how" as intelligent activity. Gilbert Ryle's discussion in the Concept of Mind helps teacher trainers to bifurcate professional training into two phases, conceptualization of the CIS and teaching education. This paper is especially concerned with the first, but may be applied to both phases in the task of relating theory to practice.

[29]Dewey, Democracy and Education, op. cit.

[30]For a discussion of teaching means see various reports of recent research on teacher effectiveness. One must be aware when discussing Ta + Tc that often reporters do not make clear whether they are referring to Ta only or Tc only or a logical synthesis (means) or a qualitative synthesis where Ta and Tc are equal (see Appendix B).

[31]As an example of learning means, see Hilda Taba's Teacher's Handbook for Elementary Social Studies (Palo Alto, California: Addison-Wesley Publishing Company, 1967).

[32]In using the basic analysis concept of isomorphism of the concept of method to parts as well as to the entire construct, we look at Ta + Tc + Tp as "acts." Sa + Le would be the "content" of the instructional situation, since acts and contents both function as parts of the means to be related to the ends-in-view. Inasmuch as the T-Se[V] is an integral part of the teaching and learning systems, the isomorphism of the concept of method to the whole CIS is established.

[33]Note that in John Dewey's book, Experience and Education it is very clear that he wishes to make this one significant contribution stand out.

[34]N. L. Gage, "Paradigms for Research on Teaching", Handbook of Research on Teaching, (ed.) N. L. Gage (Chicago: Rand McNally, 1963), pp. 94-141.